

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-23 (cancelled)

Claim 24 (currently amended): A method for adjusting tilting of a broadband optical signal transmitted via an optical ~~conductor~~transmission fiber through injecting pump signals into the optical ~~conductor~~transmission fiber, the method comprising:

transmitting a plurality of transmission bands via the optical ~~conductor~~transmission fiber;

measuring signal levels of each of the plurality of transmission bands;

injecting at least one pump signal and at least one further pump signal into the optical ~~conductor~~transmission fiber to add or subtract energy to and from a signal using a Raman effect when at least two signal levels of the measured signal levels of at least one of the plurality of transmission bands are changed or absent from the transmitted broadband optical-signal-causing ~~said-tilting~~, the at least one pump signal having a wavelength less than a minimum wavelength of each of the plurality of transmission bands and the at least one further pump signal having a wavelength that is greater than a maximum wavelength of each of plurality of transmission bands; and

selectively setting a power level for a chosen wavelength of at least one of the at least one pump signal and the at least one further pump signal such that the tilting of a transmission band, in which signal levels do not change, remains at least substantially constant at a receiving end of the optical ~~conductor~~transmission fiber.

Claim 25 (cancelled)

Claim 26 (previously presented): The method according to claim 24, wherein the change of at least two measured signal levels comprises an absence of signal in a transmission band.

Claim 27-28 (cancelled)

Claim 29 (previously presented): A method for adjusting tilting of an optical signal transmitted via an optical conductor through injecting a plurality of pump signals into the optical conductor, the method comprising:

transmitting a plurality of transmission bands via the optical conductor;

measuring signal levels of each of the plurality of transmission bands;

injecting at least one pump signal into the optical conductor when an absence of a signal level from the transmitted broadband optical signal of the measured signal levels in a transmission band of the plurality of transmission bands occurs; and

setting a level of at least one pump signal such that the tilting of a transmission band in which the absence of the signal level does not occur remains at least substantially constant at a receiving end of the optical conductor causing said tilting;

wherein a pump wavelength of a pump laser used to compensate an absent transmission band corresponds to a mean wavelength of the absent transmission band.

Claim 30 (previously presented): The method according to claim 26, wherein in the event of absence of a transmission band, a level of the at least one pump signal is adjusted at a high rate of adjustment based on known required changes in power and tilting and a signal level of the optical signal are readjusted.

Claim 31 (previously presented): The method according to claim 24, wherein wavelength and level of one or more of the pump signals are selected such that a prescribed tilting occurs at approximately a predetermined level.

Claim 32 (currently amended): The method according to claim 24, wherein the at least one pump signal is controlled to minimize tilting at the receiving end of the optical ~~conductor~~ transmission fiber during undisturbed operation.

Claim 33 (previously presented): The method according to claim 24, wherein the at least one pump signal is controlled to minimize tilting in the transmission bands during undisturbed operation.

Claim 34 (previously presented): The method according to claim 24, wherein the at least one pump signal is controlled to keep the level of the optical signal constant.

Claim 35 (previously presented): The method according to claim 24, wherein the at least one pump signal is controlled to keep the transmission bands constant.

Claim 36 (currently amended): The method according to claim 24, wherein the at least one pump signal is injected at the receiving end of the optical ~~conductor~~transmission fiber.

Claim 37-38 (cancelled)

Claim 39 (currently amended): The method according to claim 24, wherein the at least one pump signal is injected at a transmission end of the optical ~~conductor~~transmission fiber.

Claim 40 (cancelled)

Claim 41 (currently amended): The method according to claim 24, wherein the at least pump signal is injected at the receiving end of the optical ~~conductor~~transmission fiber and at least one other of a plurality of pump signals is injected at a transmission end of the optical ~~conductor~~transmission fiber.

Claim 42 (cancelled)

Claim 43 (currently amended): The method according to claim 24, wherein the at least one pump signal is injected at both the receiving end of the optical ~~conductor~~transmission fiber

and a transmission end of the optical ~~conductor~~transmission fiber when the pump signals are bidirectional transmission pump signals.

Claim 44 (cancelled)

Claim 45 (currently amended): An apparatus for adjusting tilting and level of an optical signal transmission via an optical ~~conductor~~transmission fiber comprising:

at least first and second pump lasers that respectively inject at least first and second pump signals into the optical ~~conductor~~transmission fiber to add or subtract energy to and from a signal using a Raman effect, the first pump signal having a wavelength less than a minimum wavelength of the optical signal transmission and the second pump signal having a wavelength that is greater than a maximum wavelength of the optical signal transmission; and

a controller for measuring at least two signal levels of one of at least two transmission bands, and selectively adjusting a power level for a chosen wavelength of the first and second pump signals when said at least two measured signal levels of at least one of the plurality of transmission bands are changed in the transmitted broadband optical signal causing said tilting, wherein the tilting of a transmission band in which signal levels do not change remains at least substantially constant at a receiving portion of the optical ~~conductor~~transmission fiber.

Claim 46 (canceled)

Claim 47 (previously presented): The apparatus according to claim 45, wherein change of at least two measured signal levels comprises an absence of a signal in a transmission band.

Claim 48 (currently amended): The apparatus according to claim 45, wherein the wavelengths and power levels of the respective pump signals of the first and second pump lasers are selected such that the undisturbed transmission band in which signal levels do not change has approximately a predetermined tilting and a predetermined level.

Claim 49 (previously presented): The apparatus according to claim 45, wherein the controller adjusts the power level of the first and second pump lasers at a high rate of adjustment based on known required changes in power when an absence of signal in a transmission band occurs.

Claim 50 (previously presented): The apparatus according to claim 49, wherein controller readjusts at least one of the tilting and the level of the transmission band in which signal levels do not change after the power level of the first and second pump lasers has been adjusted at the high rate of adjustment.

Claim 51 (currently amended): The apparatus according to claim 45, further comprising:
a transmitting portion connected to the optical ~~conductor~~transmission fiber; and
an optical amplifier located in at least one of the transmitting portion and the receiving portion;
wherein the controller adjusts at least one of a gain and a tilting of the optical amplifier.

Claim 52 (previously presented): An apparatus for adjusting tilting and level of an optical signal transmission via an optical conductor comprising:
at least one pump laser that injects pump signals into the optical conductor; and
a controller for measuring at least two signal levels of one of at least two transmission bands, and adjusting a power level of at least one of the respective pump signals when said at least two measured signal levels of at least one of the plurality of transmission bands are changed in the transmitted broadband optical signal causing said tilting, wherein the tilting of a transmission band in which the absence of the signal level does not occur remains at least substantially constant at a receiving end of the optical conductor;
wherein a pump wavelength of the at least one pump laser used to compensate an absent transmission band corresponds to a mean wavelength of the absent transmission band.

Claim 53 (previously presented): The apparatus according to claim 52, wherein change of at least two measured signal levels comprises the absence of the signal level.

Claim 54 (previously presented): The apparatus according to claim 52, wherein the wavelengths and power levels of the respective pump signals of at least two pump lasers are selected such that the transmission band in which signal levels do not change has approximately a predetermined tilting and a predetermined level.

Claim 55 (previously presented): The apparatus according to claim 52, wherein the controller adjusts the power level of at least two pump lasers at a high rate of adjustment based on known required changes in power when an absence of signal in a transmission band occurs.

Claim 56 (previously presented): The apparatus according to claim 55, wherein controller readjusts at least one of the tilting and the level of the transmission band in which signal levels do not change after the power level of the at least two pump lasers has been adjusted at the high rate of adjustment.

Claim 57 (previously presented): The apparatus according to claim 52, further comprising:

a transmitting portion connected to the optical conductor; and

an optical amplifier located in at least one of the transmitting portion and the receiving portion;

wherein the controller adjusts at least one of a gain and a tilting of the optical amplifier.

Claim 58 (canceled)